

Running Head: OUTPATIENT PHARMACY UTILIZATION

A Study of Outpatient Pharmacy Utilization at Naval Hospital, Camp Lejeune

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ABSTRACT

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TABLE OF CONTENTS

ABSTRACT.....	ii
TABLE OF CONTENTS.....	iii
LIST OF TABLES.....	iv
LIST OF FIGURES.....	vi
<u>INTRODUCTION</u>	1
<u>Background</u>	2
<u>Conditions which prompted the study</u>	3
<u>Problem Statement</u>	5
<u>Literature Review</u>	5
<u>DoD Pharmacy Benefit Trends</u>	6
<u>Civilian Pharmaceutical Industry Trends</u>	7
<u>Pharmacy Utilization and Cost Management Strategies</u>	8
<u>Fully Integrated Pharmacy Information Systems</u>	8
<u>Formulary Management</u>	9
<u>Generic Substitution</u>	12
<u>Cost Sharing</u>	12
<u>Volume Purchase Price Negotiations</u>	14
<u>Drug Utilization Review</u>	16
<u>Disease and Case Management Programs</u>	16
<u>Purpose</u>	17
<u>METHODS AND PROCEDURES</u>	18
<u>Data Sources and Collection</u>	19
<u>Calculating the Sample Size</u>	21
<u>Reliability</u>	22
<u>Validity</u>	23
<u>Ethical Considerations</u>	24
<u>RESULTS</u>	24
<u>DISCUSSION</u>	34
<u>CONCLUSIONS</u>	36
<u>REFERENCES</u>	39
<u>APPENDIX A</u> . Survey Instrument.....	42
<u>APPENDIX B</u> . Outpatient Pharmacy Utilization by Drug Description for NHCL	43
<u>APPENDIX C</u> . Frequency distributions for the pharmacy survey.....	49

LIST OF TABLES

Table

Table 1.	NHCL Revised Financing Costs for the Pharmacy Department.....	4
Table 2.	TRICARE Prime and Non-Prime Utilization and Costs for NHCL Formulary and Non-Formulary Drugs for each of the three pharmacy sources.....	25
Table 3.	The most frequently utilized MCSC retail network pharmacies in the Jacksonville, NC area by TRICARE Prime beneficiaries for NHCL formulary and non-formulary drugs.....	28
Table 4.	The most frequently utilized MCSC retail network pharmacies in the Jacksonville, NC area by TRICARE Non-Prime beneficiaries for NHCL formulary and non-formulary drugs.....	29
Table 5.	Descriptive Statistical Results for each of the response variables in the Pharmacy Survey.....	30
Table 6.	Full Model Analysis of Variance (ANOVA) Table for the NHCL Outpatient Pharmacy Survey.....	31
Table 7.	Multivariate Regression Results for the NHCL Pharmacy Utilization Survey.....	32
Table 8.	Top 20 NHCL Formulary Drugs Utilized by TRICARE Prime Beneficiaries in the MCSC Retail Network Pharmacies from June-August 2001.....	43
Table 9.	Top 20 NHCL Non-Formulary Drugs Utilized by TRICARE Prime Beneficiaries in the MCSC Retail Network Pharmacies from June-August 2001.....	44
Table 10.	Top 20 NHCL Formulary Drugs Utilized by Non-Prime Beneficiaries in the MCSC Retail Network Pharmacies from June-August 2001.....	45

Table 11. Top 20 NHCL Non-Formulary Drugs Utilized by Non-Prime Beneficiaries in the MCSC Retail Network Pharmacies from June-August 2001.....	46
Table 12. Top 20 Drugs Utilized by NHCL TRICARE Prime Beneficiaries in the NMOP from June – August 2001.....	47
Table 13. Top 20 Drugs Utilized by NHCL Non-Prime Beneficiaries in the NMOP from June – August 2001.....	48

LIST OF FIGURES

Figure

Figure 1.	DoD Prescription volume and costs by pharmacy source for fiscal year 2000.....	7
Figure 2.	Average cost per prescription comparisons for NHCL formulary and non-formulary drugs by pharmacy source and beneficiary type.....	26
Figure 3.	The costs of outpatient pharmacy utilization as a percent of total utilization for each pharmacy source by age for TRICARE Prime beneficiaries at NHCL.....	27
Figure 4.	The costs of outpatient pharmacy utilization as a percent of total utilization for each pharmacy source by age for Non-Prime beneficiaries at NHCL.....	27
Figure 5.	Network pharmacy utilization as a function of referrals to the civilian network for care.....	33
Figure 6.	Self-reported reasons for pharmacy utilization in the retail network.....	34
Figure 7.	Pharmacy Survey frequency distributions for the self-reported number of retail pharmacy visits during the past 12 months.....	49
Figure 8.	Pharmacy Survey frequency distributions for the self-reported number of visits to a healthcare provider during the past 12 months.....	49
Figure 9.	Pharmacy Survey frequency distributions for the self-reported number of referrals to the retail network for care during the past 12 months.....	50
Figure 10.	Pharmacy Survey frequency distributions for the perception of waiting times at the NHCL Pharmacy.....	50
Figure 11.	Pharmacy Survey frequency distributions for the perceived ability of the NHCL Pharmacy to meet their medication needs.....	51
Figure 12.	Pharmacy Survey frequency distributions for the overall perception of pharmacy services at NHCL.....	51

Figure 13. Pharmacy Survey frequency distributions for the overall perception of care received at NHCL.....	52
Figure 14. Pharmacy Survey frequency distributions for the variable of sponsor's rank.....	52
Figure 15. Pharmacy Survey frequency distributions for the variable of beneficiary status.....	53

A Study of Pharmacy Utilization at Naval Hospital, Camp Lejeune

Prescription drug costs and utilization in the United States have risen steadily over the past decade. These trends are likely to continue, due to an aging population and evolving research efforts (Drug Benefit Trends, 2000). The costs associated with these trends have prompted some Managed Care Organizations (MCOs) to develop a wide variety of pharmacy utilization management strategies and best business practices in an to attempt to control pharmacy-related costs and improve quality and efficiency.

In recent years the Military Health System (MHS) has made great efforts to adopt some of the civilian MCO practices such as formulary restrictions, generic substitution, and cost sharing by the beneficiary. However, increased pharmacy utilization and the rising cost of prescription drugs have been further exacerbated in the MHS by a disjointed benefit structure, the lack of utilization data in the retail network and the absence of uniform business rules. The current pharmacy benefit structure allows beneficiaries to obtain pharmacy services from numerous sources, and at different costs to the Military treatment facility (MTF), thereby making it difficult to forecast demand or cost (DoD Pharmacy Benefit Report, 1999). Additionally, there remains a lack of readily available, specific utilization data that is timely and in a usable format. While pharmacy reports from the Military's Composite Health Care System (CHCS) capture data related to MTF pharmacy utilization, timely and usable drug and beneficiary utilization data for MCSC retail network pharmacies are more difficult to obtain. This data is essential in making sound management decisions for effective pharmacy utilization management and the implementation of uniform business rules at the MTF level.

The recent extension of pharmacy benefits to the over 65 population may also place increased pressure on military treatment facilities to provide services to a larger population resulting in a utilization shift to the more expensive retail pharmacies. Unfortunately, MTF level

data regarding pharmacy utilization in retail network pharmacies has been difficult to capture. Naval Hospital, Camp Lejeune (NHCL), like most other MTFs, is responsible for providing pharmacy benefits to a highly transient and relatively undefined beneficiary population without the essential data required to do so efficiently.

Background

NHCL is located on Marine Corps Base, Camp Lejeune in eastern North Carolina. The hospital operates 120 inpatient beds; expandable to 180, as well as general and specialty outpatient services. The main hospital pharmacy and seven satellite pharmacies at clinics across the base provide service to a population of about 90,000 beneficiaries. In 2001 these pharmacies filled nearly 54,000 outpatient prescriptions a month at an average aggregate cost of nearly \$900,000, resulting in an average cost per prescription of \$16.66 (CHCS).

In 1998, an alternative revised financing mechanism was introduced whereby NHCL's direct funding and financial responsibilities were increased. Under revised financing, NHCL assumed full responsibility for the healthcare costs of its TRICARE Prime enrolled beneficiaries and began reimbursing the managed care support contractor for the care they received in the network. This new financing approach was designed to provide the MTF with complete control of the funds used to pay for this care, and therefore create new incentives to manage resources more efficiently (General Accounting Office [GAO], 1997).

Under revised financing, MTF commanders are more cognizant of the costs incurred through care provided in the contractor's network. Each month, revised financing costs are separated by department and reported to the MTF commander and the responsible directorates for review. This information is then trended and displayed for analysis of special and common cause variation so that informed management decisions can be made. Unfortunately, this data

lacks key information such as beneficiary type and pharmacy location that would be beneficial with regard to managing the pharmacy benefit.

Conditions Which Prompted the Study

Retail network pharmacy costs represent one of the largest percentages of revised financing costs for any single department at NHCL. These costs can be separated by whether they were incurred as a result of inpatient or outpatient utilization. Network inpatient pharmacy utilization represents a relatively uncontrollable cost because the needs of patients referred to civilian hospitals are beyond NHCL's scope of care. Outpatient pharmacy costs however, represent an opportunity to recapture workload in the less expensive MTF because beneficiaries can, for the most part, choose where they receive this benefit. Unfortunately, outpatient pharmacy revised financing costs continue to rise despite efforts to improve efficiency and reduce waiting times that would be expected to increase beneficiary satisfaction and reduce network utilization. Table 1 shows the pharmacy-related revised financing costs for NHCL from January through August of 2001 (NHCL Claims Data, 2001).

Although outpatient pharmacy revised financing costs only make up a small percentage of total pharmacy costs at NHCL; they are significant because MCSC retail network pharmacies are unable to take advantage of DoD Distribution and Pricing Agreements (DAPA), and therefore, costs can be 2 or 3 times that of NHCL for the same drugs (DoD Pharmacy Benefit Report, 1999). The higher cost of prescription drugs in retail network pharmacies prompts the need for further investigation into the specific utilization patterns, behaviors, and perceptions of the beneficiary population to devise alternatives for recapturing some of the associated workload.

Table 1

NHCL Revised Financing (RF) Costs for Outpatient Pharmacy (January 2001 - August 2001)

Month	# of Prescriptions	Cost	Cost/Script
January	1742	\$90,800.53	\$52.12
February	1613	\$95,011.99	\$58.90
March	2154	\$120,425.83	\$55.91
April	1676	\$108,678.21	\$64.84
May	2281	\$131,794.58	\$57.78
June	1013	\$52,060.20	\$51.39
July	2031	\$133,286.61	\$65.62
August	1863	\$117,087.31	\$62.85

Source: NHCL Revised Financing Data

Under the current pharmacy benefit structure, beneficiaries may obtain their outpatient pharmacy benefits in one of three ways; through MTF pharmacies, the National Mail Order Program (NMOP), or through one of the MCSC retail network pharmacies. Pharmacy utilization management practices typically applied by civilian MCOs such as tiered co-pays and restricted formularies have also been applied in the MHS to allow choice while providing incentives for beneficiaries to utilize the most cost efficient sources to the government. MTF pharmacies are the least expensive source for the government and have a semi-closed formulary whereby providers are required to prescribe certain drugs in some classes whereas other classes have preferred lists. These pharmacies are required to fill all DEERS eligible beneficiary prescriptions (up to a 90-day supply) as their formulary supports, regardless of beneficiary enrollment category, and with no out of pocket expense to the patron. The NMOP has an open formulary with a preferred drug list and is primarily for maintenance medications for chronic

conditions. It requires a co-pay (except active duty) of \$3 for a 90-day supply of generic medications, and \$9 for a 90-day supply of brand name medications. The MCSC retail network pharmacies have an open formulary requiring co-pay (except active duty) of \$3 for a 30-day supply of generic medications, and \$9 for a 30-day supply of brand name medications (TRICARE web page). Under revised financing, NHCL is financially at risk for any eligible beneficiary utilizing the MTF pharmacy, as well as TRICARE Non-Active Duty Prime enrolled patients utilizing one of the MCSC retail network pharmacies.

Problem Statement

As previously stated, the current benefit structure allows beneficiaries to obtain outpatient pharmacy benefits from numerous sources, each at a different out-of-pocket expense for the patient, and each at a different cost to the MTF. Rising revised financing costs indicate that numerous prescriptions continue to be filled in MCSC retail network pharmacies, at a significant cost to NHCL, despite the economic incentives for using the MTF pharmacies as the primary source for prescriptions. It is therefore important to identify and understand the factors that contribute to MCSC retail pharmacy utilization by TRICARE Prime beneficiaries.

The focus of this study was to evaluate MCSC retail network pharmacy utilization at NHCL to determine the extent of use and associated costs by both TRICARE Prime and Non-Prime beneficiaries, and most importantly to determine why this utilization is occurring by Prime beneficiaries. The results of this study can then be used in developing improved utilization management strategies that will reduce outpatient pharmacy revised financing costs.

Literature Review

A review of the literature was conducted to evaluate studies relevant to this project, develop a basic understanding of the DoD pharmacy benefit, and to provide a comparative look at pharmaceutical industry trends, current pharmacy utilization statistics, and cost management

initiatives within the civilian and Military health systems. That review identified numerous studies addressing DoD pharmacy benefits. However, no similar studies were found that specifically examine beneficiary utilization patterns, behaviors, and perceptions in the MHS or at the individual MTF level.

DoD Pharmacy Benefit Trends

MTF pharmacies are required to dispense prescriptions for drugs on the DoD's basic core formulary (BCF), which consists of 175 drugs in 71 classes (GAO, 2001). In addition to BCF drugs, MTF pharmacies may also choose to carry certain drugs as deemed necessary to care for their specific beneficiary population (Assistant Secretary of Defense for Health Affairs [ASDHA], 1999). In fiscal year 2000, DoD beneficiaries obtained 54 million MTF pharmacy and mail order prescriptions at a cost of \$1.14 billion, an increased cost of 17.5% from the previous year (GAO, 2001). In the same year, 12 million prescriptions were filled in more than 28,000 different MCSC retail network pharmacies at a cost of \$455 million, representing an average additional cost of \$17 per prescription when filled by this source (GAO, 2001). The cost for MCSC retail network prescriptions has increased an average of 34% a year since 1995 (GAO, 2001). DoD prescription volume and costs in fiscal year 2000 are shown in Figure 1.

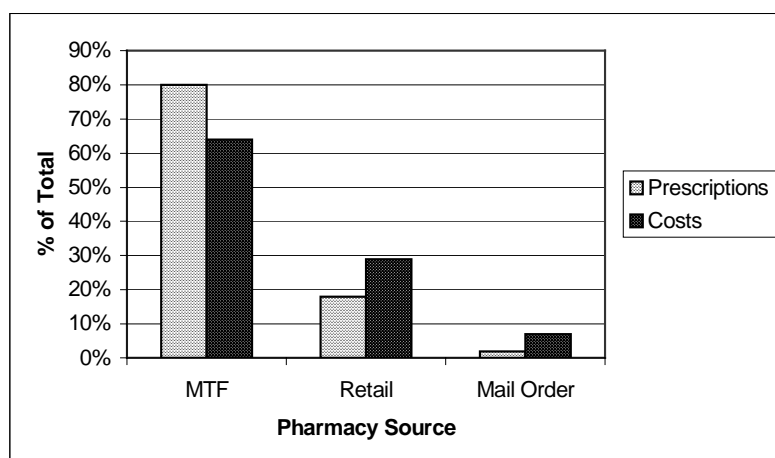


Figure 1. DoD Prescription volume and costs by pharmacy source for fiscal year 2000.

Civilian Pharmaceutical Industry Trends

As prescription drug prices continue to rise, pharmacy utilization management continues to be one of the greatest concerns among MCOs, particularly in today's health care environment, where 4 of every 5 people who visit their physician leave with a prescription (NACDS, 2001). Between 1999 and 2000, the average price per retail prescription increased by 9.2%, from \$42.42 to \$45.79, with an average brand name prescription cost of \$65.29 and an average generic prescription cost of \$19.33 (NACDS, 2001). This had a major impact on government health plans and other third party payers as beneficiaries in those plans accounted for 75% of all prescriptions filled in 2000 (NACDS, 2001).

The aging of the population also poses concerns for MCOs with regard to pharmacy cost and utilization. As people continue to live longer, and the average age of the population increases as the baby boomer generation grows older, the demand for prescription drugs will undoubtedly increase. The Medicare eligible population now accounts for 12.6% of the total US population, with each person over age 65 requiring an average of 20 prescriptions a year at an average annual cost of \$704.52. In comparison, the average person in his or her 20s requires an average of **only** 3 prescriptions per year at an average annual cost of \$81.06 (Drug Benefit Trends, 2000).

The current shift to outpatient care also effects outpatient pharmacy utilization. According to the Aventis Managed Care Trends Digest (2000), the number of hospital admissions per 1,000 Health Maintenance Organization (HMO) members decreased from 74.6 in 1990 to 58.4 in 1998. During this same period the average length of stay (ALOS) (in days) decreased 26.0% and 13.8% for commercial and Medicare HMO members. Yet despite a greater focus on managing the pharmacy benefit, MCOs still witnessed a rise in prescription drug expenditures as a proportion of total health care costs. Although greater than 88% of HMOs

were using Pharmacy Benefits Managers (PBM) by 1998, pharmaceutical expenditures as a percentage of total operating expenses still climbed to 13.7%, up from 9.0% in 1990 (Drug Benefit Trends, 2001 & Aventis Managed Care Trends Digest, 2000).

Pharmacy Utilization Management Strategies

Nearly all MCOs utilize some combination of pharmacy utilization management strategies and best business practices to control pharmacy costs, and most employ a pharmacy benefits manager (PBM) to centrally administer these programs. The business practices and strategies used by PBMs to control drug program costs are designed to influence the behaviors and attitudes of stakeholders in the pharmacy benefits process. These stakeholders include the administrators, drug manufacturers, pharmacies/pharmacists, prescribers, and consumers (Kreling, 2000). This effort to centralize the administrative activities of the pharmacy represents the first step in developing an effective pharmacy utilization management program. The DoD Pharmacy Benefit Report (1999) recognized the need to centrally administer and fund the pharmacy benefit program as one of the top ten best business practices that could be adopted from the civilian sector. According to the report, the lack of centralization of DoD pharmacy benefits has led to fragmentation, uneven policies, and a disjointed benefit structure. Many of the other utilization management strategies such as information systems integration, manufacturer rebates, and formulary uniformity rely on this centralization to be conducted efficiently.

Fully Integrated Pharmacy Information Systems

The most important utilization management strategy is the design and implementation of a fully integrated pharmacy information system. The value of such an information system in successfully managing pharmacy benefit programs cannot be overemphasized. To be fully utilized, these systems must serve as more than just data repositories, but rather as integrated

decision support tools for prospective utilization management by pharmacists and administrators. Most PBMs use these systems not only to collect, analyze, and report data for disease management, provider profiling, and to monitor trends, but also to conduct prior authorization, online edits, and other prospective drug utilization review (PDUR) programs (Edlin, 2001).

The MHS contracted with a national pharmacy transaction manager, and fully implemented its version of an integrated pharmacy system (IPS) known as the Pharmacy Data Transaction Service (PDTs) in April of 2001. Prior to that, the General Accounting Office (GAO) reported that the lack of integrated pharmacy information systems in the MHS may well have resulted in patient safety issues and overutilization causing millions of dollars of unnecessary costs each year (GAO, 1998, 1999). The PDTs was created to improve inpatient care, reduce pharmacy related costs and capture total drug usage and expenses (IPS/PDTs, 2001). The Office of the Secretary of Defense for Health Affairs (OSDHA) TRICARE Management Activity (TMA) mandated that this system, which is centrally located at Brooks AFB in San Antonio, Texas, collect data for every prescription filled at all MTF pharmacies, TRICARE MCSC retail network pharmacies and the NMOP contractor. These data are used to build an individual prescription drug profile for each patient in the DoD system for use in PDUR and other utilization management reports. The PDTs also provides PBMs the ability to retrieve specific ad hoc reports through their Customer Service Support Center (CSSC) for use in the utilization management decision-making process (IPS/PDTs, 2001). Unfortunately, the beneficiary's TRICARE enrollment status is not captured in the transaction process, making it difficult to differentiate between patients for whom the MTF and MCSC Contractor are financially at risk in a revised financing environment.

Formulary Management

Formularies are a predefined list of covered or reimbursable drugs (Kreling, 2000). Recent studies have shown that the use of formulary management strategies can significantly reduce prescription drug utilization and costs (Motheral, Delate, Shaw, & Henderson, 2000). These strategies are used to influence the utilization behaviors of providers and patients, and normally involve combinations of exclusions, limitations, and prior authorizations, as well as a tiered cost sharing mechanism.

Formularies are most often defined as open, closed (restricted), or preferred (partially restricted). Open formularies, as the name implies, include all available drugs. A closed or restricted formulary includes only those drugs that are approved by the MCO or employer. Closed formularies may include only one drug per drug class, or allow multiple drugs within each class (Kreling, 2000). Preferred or partially restricted formularies also include only those drugs listed by the MCO or employer, but allow exceptions through prior authorization procedures or at an increased out of pocket expense to the patient (Kreling, 2000; DoD, 1999).

Decisions to exclude drugs from a closed or preferred formulary are normally made based on cost or medical necessity. Drug exclusions based on cost are made for numerous reasons. MCOs or employers may negotiate volume purchase agreements, which require them to restrict other similar drugs, or list drugs as preferred on their formularies. Similarly, formularies may restrict brand name drugs in lieu of bioequivalent generics (Motheral et al, 2000). On a partially restricted formulary, cost sharing by the patient may be increased for brand name or non-preferred drugs. Drugs may also be excluded from formularies because they are deemed medically unnecessary. These drugs include those used for cosmetic situations or quality of life conditions such as vitamins or appetite suppressants (DoD Pharmacy Benefit Report, 1999). Quality of life drugs such as Rogaine and Viagra may have limitations imposed on the amount

that may be prescribed during a certain period of time. Limitations may also be placed on certain drugs based on their potential for abuse or misuse (DoD, 1999).

When developing formulary management strategies, it is important to balance cost reduction and patient satisfaction as more than 70% of healthcare consumers cite pharmacy benefits as their primary reason for purchasing a health plan (Fahey, 1996). While it is generally accepted that formulary management can result in decreased utilization and lower costs, these strategies can also have a negative impact. Pharmacoeconomics represents an evolving field in which prescription drug utilization can be compared with the costs and outcomes of other medical treatments to improve the allocative decision-making process of formulary management (Evans, Dukes, & Crawford, 2000). Recent studies suggest that the increased use of new and existing drugs may result in lower total health care expenditures overall (Grabowski, 1998).

In the MHS, formulary management decisions are made at both the MTF and DoD level. MTFs are required by the DoD Pharmacy and Therapeutics Committee to carry and dispense a basic core formulary (BCF) consisting of 175 drugs in 71 different drug classes (GAO, 2001). In addition to the BCF, MTFs normally establish a local pharmacy and therapeutics (P&T) committee to make supplemental formulary decisions to remove or add drugs deemed necessary to provide care for their enrolled beneficiary population (GAO, 2001; ASDHA, 1999).

The MTF formulary, consisting of the DoD BCF and the additional drugs added by the local P&T committee is primarily open, with less than 10% of the classes listed as closed or preferred (GAO, 2001). Those drugs listed as closed or preferred must be utilized in adherence to established committed use contracts. MTFs may not restrict access to drugs listed on their formularies as a cost reduction strategy (ASDHA, 1999). Furthermore, if a patient is being treated by a MTF provider, and it is determined that the patient requires medications that are not listed on the MTF formulary, a non-formulary request must be issued and the prescription must

be filled (ASDHA, 1999). According to a 1999 memorandum for the Surgeon Generals' of the Armed Forces, "patients who are being followed by an MTF provider will not be referred to commercial (mail or retail) pharmacies for prescriptions written by MTF providers".

Generic Substitution

Generic substitution is another common cost reduction strategy utilized by PBMs and employers. Generic drugs are considerably less expensive than their brand name counterparts, and therefore an incentive exists to influence consumers, providers, and pharmacists to utilize generic alternatives whenever possible through cost-sharing mechanisms, higher dispensing fees, and maximum allowable cost (MAC) programs. Cost sharing mechanisms are designed to target the consumer and often require a higher co-payment or coinsurance for brand name drugs that have a generic equivalent (Kreling, 2000). To provide incentives for the pharmacist/pharmacy to dispense generic rather than the brand name drugs, substitution strategies normally involve higher dispensing fees for generic drugs. As a further incentive, the third party payors may only agree to reimburse at a MAC for generic drugs, thereby making the pharmacist/pharmacy responsible for the difference in cost between the generic and brand name drug (Kreling, 2000).

Cost Sharing

Cost sharing is a management strategy designed to influence utilization by shifting a portion of the prescription cost responsibility to the consumer (Kreling, 2000). Cost sharing strategies attempt to make the consumer more cognizant of the differing costs for brand name and generic drugs and to influence them to make more cost effective choices. Historically, these strategies required patients to make a fixed price co-payment for every prescription they need, regardless of the actual drug cost.

According to a study by Wyeth-Ayerst (1999), nearly 80% of employer prescription drug plans require some form of co-payment for filling prescriptions in retail pharmacies. Although

this strategy began by imposing a single fixed price for each prescription, most MCOs have begun adopting a triple-tiered system to differentiate between generic, brand name, and non-formulary drugs (Penna, 2000). In a triple-tier co-pay system, generic or preferred drugs require the least co-pay, which is commonly set at \$5.00 in most programs (Penna, 2000). The second tier is for brand name medications and carries a co-pay that is normally about twice that of the first tier (Penna, 2000). The third tier requires the highest co-pay; normally \$25 in most plans, and is commonly reserved for newly approved medications and non-formulary drugs (Penna, 2000).

Coinsurance is a similar cost sharing mechanism that is currently less popular among MCOs and employers. Coinsurance strategies are variable price cost sharing mechanisms that require the consumer to pay a percentage of the drug cost for each prescription filled. Similar to co-payment, this percentage may vary depending on whether the drug is generic, brand name, or non-formulary, however; this is less common in coinsurance cost sharing strategies (Kreling, 2000). Coinsurance rates vary, but are usually set at around 20% of the drug cost (Kreling, 2000).

As prescription prices continue to rise, MCOs and employers will be forced to continue shifting more of the economic burden to the consumer. Kreling warns that this could potentially have a negative impact on health outcomes, as well as on future healthcare expenditures, as patients forego expensive drug treatment or utilize inexpensive but less effective drugs.

The MHS uses a two-tiered cost sharing strategy whereby beneficiaries (except active duty) using MCSC retail network pharmacies are required to pay \$3.00 for a 30-day supply of generic medications and \$9.00 for a 30-day supply of brand name medications. These same co-payments are also applied to the NMOP, but for a 90-day rather than a 30-day supply. However,

all DEERS eligible beneficiaries can utilize MTF pharmacies (as the formulary permits) to receive medications with no out-of-pocket expense.

Volume Purchase Price Negotiations

Volume purchase price negotiations are a cost management strategy used by many PBMs. In the civilian sector, PBMs represent the collective buying power of the numerous beneficiaries enrolled to one or more MCOs. This allows them to take advantage of economies of scale and negotiate volume purchase discounts with pharmacies. Pharmacies that agree to the negotiated prices are included in the MCO network of pharmacy providers. According to Kreling (2000), these negotiated prices based on volume and a restricted network can be some of the lowest in the country.

The actual pharmaceutical prices that the PBMs negotiate represent an ingredient cost plus a dispensing fee that varies depending on whether the drug is generic or brand name (Kreling, 2000). The ingredient cost for a brand name drug is normally calculated by deducting a certain percentage from the average wholesale price (AWP). In a survey conducted by Wyeth-Ayerst in 1998, this deduction averaged about 13%. For generic drugs, or those drugs for which the patent period has expired, the price may be calculated in the same manner, or by a maximum allowable cost (MAC) per unit dispensed (Kreling, 2000). In the same study, Wyeth-Ayerst found the average dispensing fees were \$2.44 and \$2.35 for generic and brand name drugs respectively.

In the MHS, volume purchase price negotiations are designed to target the drug manufacturers rather than the retail pharmacies. The MTFs and NMOP pharmacy programs procure the majority of their drugs through the Defense Supply Center in Philadelphia (DSCP) using a prime vendor system for delivery (DoD Pharmacy Benefit Report, 1999). This system allows the DoD to secure significant volume discounts from the drug manufacturers and all but

eliminates the need for wholesale and retail level procurement. DoD prescription drug costs are therefore significantly less than those of civilian MCOs.

The DoD uses three types of purchasing vehicles to secure "best federal prices" for prescription drugs (GAO, 2001). The most widely used purchasing vehicle is the federal supply schedule (FSS) for pharmaceuticals. The Veterans Health Care Act of 1992 requires drug manufacturers to list their drugs on the FSS in order to receive Medicaid reimbursement for their products (DoD Pharmacy Benefit Report, 1999; GAO, 2001). Under the law, drug manufacturers must also sell brand name drugs listed on this schedule to the DoD at no more than 76% of the manufacturer's average nonfederal price. By using the FSS the DoD can purchase prescription drugs 50 to 58 percent below the AWP (GAO, 2001).

In addition to FSS discounts, the DoD can further reduce drug costs by negotiating blanket purchase agreements (BPA) and committed use (requirements) contracts with manufacturers. BPAs offer variable discounts and require specific volumes of the negotiated drugs be purchased and listed in a preferred status on the DoD BCF (GAO, 2001).

To enter committed use or requirements contracts the VA and DoD conduct drug reviews to identify brand name drugs that are therapeutic alternatives within the same class. As a result of these reviews, one drug is selected for adoption based on price, and the respective class is closed on the formulary. Similarly, following bioequivalence tests, the DoD secures committed use contracts for generic drugs by conducting competitions for an exclusive contract with one manufacturer (GAO, 2001). Providers are then required to prescribe, and MTF pharmacies are required to stock and dispense these drugs (GAO, 2001). Purchase costs for committed use contract drugs are an average of 33% below FSS prices (GAO, 2001).

Drug Utilization Review

The use of fully integrated information systems to conduct drug utilization review (DUR) has greatly improved efficiency and quality in pharmacy benefits management. DUR can be prospective or retrospective in nature. Retrospective DUR can be used in numerous ways. Past claims information can be reviewed for inconsistencies that require investigation, and drug utilization statistics can be used to evaluate prescribing and usage patterns (Kreling, 2000). By retrospectively reviewing drug utilization information, trends can be identified and adjustments made to avoid unnecessary future costs.

Prospective drug utilization review (PDUR) involves reviewing information at the point of service to avoid overutilization, duplicate therapies, drug interactions, and medication allergies. This system allows pharmacists to view patient information during the prescription filling process and alerts them to potential problems, facilitating adjustments as necessary to improve quality and reduce costs. Because of these advantages, the use of PDUR increased from 65% in 1996 to 76% in 1998 (Kreling, 2000; Wyeth-Ayerst, 1999). Although PDUR can reduce costs and improve quality, it also increases pharmacist responsibilities, resulting in a cumbersome system that could potentially reduce productivity. This however, may be an unavoidable trade-off (Kreling, 2000).

Disease and Case Management Programs

Disease management programs are a form of retrospective drug utilization review designed to identify how prescribing and utilization patterns affect health outcomes. Successful disease management programs are able to identify the effects of underutilization, noncompliance with treatment regimens and the use of therapeutic alternatives on health outcomes (U.S. Pharmacopia DUR Advisory Panel, 2000). This information can then be used to implement

clinical practice guidelines and best business practice protocols based on the efficacy of pharmaceutical treatment and the associated costs.

Case Management Programs focus on individual patients based on retrospective drug utilization data. The intent is to identify patient specific utilization patterns so that appropriate intervention can be implemented to improve treatment effectiveness and efficiency.

Purpose

The purpose of this project was to analyze outpatient pharmacy utilization at NHCL and identify those factors that lead to pharmacy utilization in the MCSC retail network. The following research questions were developed to organize and guide this analysis:

1. What is the extent and cost of outpatient pharmacy utilization among the three available prescription drug sources (MTF, MCSC, and NMOP)?
2. Where and to what extent does outpatient pharmacy utilization occur in the MCSC retail network by TRICARE Prime and Non-Prime beneficiaries?
3. Do certain characteristics, behaviors, and perceptions of the beneficiary predict MCSC retail network pharmacy utilization?
4. To what extent do factors regarding access and convenience determine MCSC retail network pharmacy utilization by TRICARE Prime beneficiaries?

For this study it was assumed that pharmacy utilization patterns could be attributed to: cost, quality (service), access, convenience, and knowledge of the product (marketing). The alternate hypothesis was that MCSC retail network pharmacy utilization by TRICARE Prime beneficiaries is primarily a function of access and convenience, as opposed to perceptions of quality, service, or knowledge of pharmacy benefits. The null hypothesis was that MCSC retail network pharmacy utilization by TRICARE Prime beneficiaries occurs randomly and cannot be significantly attributed to any of these factors.

Information and knowledge gained from this study can be used to recommend improved utilization management strategies to reduce outpatient pharmacy revised financing costs at NHCL, and may also be applied at the MTF level throughout the MHS.

METHODS AND PROCEDURES

This study was conducted in two phases. In the first phase, PDTS and NHCL TRICARE enrollment data were collected and imported into Microsoft Access so that the data could be separated and queried. Descriptive statistics from these queries can be found in the results section of this study. These include outpatient pharmacy utilization and the associated costs for TRICARE Prime and Non-Prime beneficiaries by pharmaceutical source, pharmacy location, patient's age, patient's beneficiary status, drug description, and formulary type (NHCL formulary or non-formulary).

In the second phase, a survey instrument was administered (see Appendix A) to capture a sample of self-reported data from TRICARE Prime beneficiaries regarding outpatient pharmacy utilization behaviors and perceptions. The data collected were compiled using the Statistical Package for the Social Sciences (SPSS) version 11.0 to compute the descriptive and inferential statistical results used to address the third and fourth research questions.

Multivariate linear regression was used to determine whether certain characteristics, behaviors, and perceptions of the beneficiary predict MCSC retail network pharmacy utilization. The dependent response variable was the self-reported number of times the beneficiary utilized a retail network pharmacy in the past year. The independent predictor variables used were divided into three categories relating to demographic characteristics, behaviors, and perceptions. The demographic explanatory variables were age, gender, sponsor's rank, beneficiary status (e.g. AD, ADDEP, RET, and RETDEP), and Primary Care Clinic to which assigned. The behavior explanatory variables were the number of visits to a health care provider in the past year and the

number of referrals to a civilian provider for treatment in the past year. The perceptions explanatory variables were: awareness of the ability to fill prescriptions from a non-MTF provider in the MTF pharmacy, perception of waiting times at the Naval Hospital pharmacy, perception of the ability of the Naval Hospital pharmacy to meet medication needs, overall satisfaction with care received at NHCL, and overall satisfaction with pharmacy services at NHCL. The alpha probability for this analysis was set at the $p < .05$ level as a baseline decision rule for rejecting the null hypothesis.

For the fourth research question regarding the extent to which access and convenience factors determine MCSC retail network pharmacy utilization, the survey asked those beneficiaries that had at least one visit to a retail network pharmacy in the past year to select all the reasons that might have influenced that choice (see Appendix A for survey). Descriptive statistical results were reported for this data to illustrate the self-reported reasons for MCSC retail network pharmacy utilization.

Data Sources and Collection

Data regarding pharmacy utilization in the MHS can be collected from multiple sources including revised financing claims from the managed care support contractor (Humana), CHCS reports, the All Regional Server (ARS) Bridge, the PDTS, and self-reported surveys of beneficiaries. However, each source of data mentioned has limitations when trying to answer the research questions presented. Revised financing data from Humana is collected each month regarding prescription drug claims from retail network pharmacies. This data does not provide specific information on where prescriptions were filled in the network. Additionally, data for Non-Prime patients is not available because NHCL only receives claims for those patients for which it is financially at risk. The ARS Bridge contains data regarding pharmacy utilization, but suffers from the same limitations as claims data, and is also somewhat untimely as it can take

several months before it reaches the server. CHCS is also limited in that it only contains data regarding pharmacy utilization information on prescriptions filled within MTF pharmacies.

For this study, data were collected from the PDTS and a self-reported survey of TRICARE Prime beneficiaries. The PDTS contains most of the data required to answer the first two research questions. The only limitations to the data collected from the PDTS is that there is no cost data for prescriptions filled by the MTF, and the TRICARE status of the beneficiary is unknown. It was therefore necessary to match the TRICARE prime enrollment data for NHCL with the PDTS data by the sponsor's social security number and family member prefix (FMP) to differentiate between the various TRICARE beneficiary categories. This was necessary to distinguish between those patients for whom NHCL and Humana are financially at risk. Unfortunately, it was also impossible to distinguish between Active Duty and Retired beneficiaries and therefore all were considered MTF reliant Prime, although neither NHCL nor Humana is financially responsible for Active Duty care in the retail network.

PDTS data were collected from the PDTS customer service support center in San Antonio as an ad hoc report file in Microsoft Access database format. This file contained data regarding every prescription filled for NHCL beneficiaries during the period of June 01, 2001 to August 31, 2001 (259,696 total). Data for each prescription included the patient's FMP, the sponsor's social security number, the patient's date of birth, the medication dispensed, the metric decimal quantity of the medication dispensed, the date the medication was dispensed, the total cost of the prescription (for MCSC and NMOP only), the service category where the prescription was filled (MTF, NMOP, or MCSC), the location where the prescription was filled (pharmacy name), and the prescribing physician's name and DEA number. Additional update fields were created to include the filling pharmacy's address, the patient's beneficiary category (Prime or Non-Prime), and whether or not the dispensed drug was on the NHCL formulary.

To answer the third and fourth research questions a survey instrument was administered during a two-week period from 16-31 January 2002. Survey locations included the Family Medicine Clinic (located within NHCL) and the Navy Family Medicine Clinic located off base on Henderson Drive. The survey was administered in these primary care clinics because they are primarily responsible for seeing the TRICARE Prime beneficiaries that were the focus of research questions three and four, and the only beneficiaries for whom NHCL is financially responsible in terms of revised financing. The survey was completely voluntary and offered to all adult patients presenting to the primary care clinics during the collection period. Only adult patients were surveyed because they represent the decision making portion of the population regarding pharmacy utilization, regardless of whether it is they or their children being treated.

The survey was administered and collected by the reception clerks in each of the primary care clinics. Data from the surveys was then coded and input into SPSS for the descriptive and inferential statistical analysis mentioned above.

Sample Size

Since the second part of the survey dealt primarily with those beneficiaries that had utilized a retail network pharmacy during the past twelve months, it was necessary to secure a sample that accurately reflected MCSC retail network pharmacy utilization. To ensure that the survey sample was representative of the population as a whole, the appropriate sample size was calculated using proportional data collected from a pilot survey of 50 randomly sampled TRICARE Prime Beneficiaries in the Family Medicine Clinic. This revealed that about 30% of the beneficiaries had at least one prescription filled by a retail network pharmacy in the previous 12 months. In addition to this information regarding the approximate population dispersion, it was also necessary to make subjective decisions regarding confidence level and interval range (within which the population's proportion is expected) to calculate the sample size. For this

study, the confidence level was set at 95% and the interval range at $\pm 6\%$. The appropriate sample size for this study was calculated using the formula, $n = pq/\sigma_p^2$ (Cooper & Schindler, 1998):

$n = 224$	The sample size calculated from the formula; $n = (.21)/(.06/1.96)^2$
$p = .3$	The estimated proportion of the population utilizing MCSC retail network pharmacies during the previous 12 months (from the pilot survey).
$q = .7$	The estimated proportion of the population not utilizing MCSC retail network pharmacies during the previous 12 months.
± 0.06	The desired interval range within which the population proportion is expected (subjectively decided).
$1.96\sigma_p$	The 95 % confidence level for estimating the interval within which to expect the population proportion (subjectively decided).
$\sigma_p = .031$	The standard error of the proportion ($0.06/1.96$).
$pq = .21$	The measure of sample dispersion used to estimate the population dispersion.

Based on these calculations, a sample size of 224 or more was needed to be 95% confident that the population percentage of retail network pharmacy utilization was within $\pm 6\%$ of the sample percentage of retail network pharmacy utilization.

Reliability

The reliability of this study is dependent upon the reliability of the data from the various sources. Data collected from the PDTS accounts for all prescriptions filled for NHCL beneficiaries from June 01, 2001 through August 31, 2001. This data was reported as received from the PDTS and, as previously stated, the DoD has mandated that all pharmacies provide data regarding each prescription filled for DoD beneficiaries to the PDTS.

The data collected regarding TRICARE Prime enrollment for NHCL was matched by SSN and FMP with the PDTS data. Unfortunately, enrollment data is very dynamic and changes on a daily basis. Therefore, it is impossible to accurately account for exact enrollment over a

period of time. This inability to account for changes in enrollment may have caused estimations of TRICARE Prime utilization to be understated. TRICARE Prime beneficiaries that arrived or left, before or after the data was collected were not coded as being "Prime". This understatement of Prime utilization is considered by the researcher to be a conservative limitation as it applies to the purpose of this study.

Data collected from surveys are always subject to reliability issues. Various receptionists at separate primary care clinics administered the survey, and therefore, the reliability of the data is contingent upon the perceptions and attitudes of these receptionists about administering and collecting the survey. However, great care was taken to educate all receptionists to the same standard on the purpose and procedures for administering the survey. Additionally, directions for administering the survey were posted in all reception areas, and the survey was designed to be brief and easily understood by all beneficiaries.

Validity

This study was designed in two phases requiring data to be gathered from multiple sources for a sample of the population in question. The validity of this study is dependent upon the ability of sample data to be generalized across the entire population and reflect TRICARE beneficiary behaviors, perceptions, and attitudes as a whole at any given time. Data from the PDTS regarding MCSC retail pharmacy utilization was only collected for a three-month period and therefore may be subject to a minimal amount of systematic variance. Although this data reflects the utilization of the entire population in question, it only represents a portion of the entire year, and therefore cannot account for seasonal variances in utilization. This limitation was unavoidable because data for an entire year would result in a database too large for the researcher to manipulate.

Data collected from the survey instrument is also subject to the same systematic variance as the data from the PDTS as it was only collected during a two-week period. However, the survey was directed towards NHCL TRICARE Prime beneficiaries, and since all beneficiaries of this type are enrolled to one of the primary care clinics, every beneficiary in the population had a non-zero chance of being included in the sample, thus reducing the chance for sampling error.

Ethical Considerations

Patient privacy and confidentiality were strictly protected. Data obtained from the PDTS, CHCS, and DEERS databases containing patient information was password protected, and stored on the researcher's computer during the research and analysis phase of this study. Patient information was used solely for the purpose of sorting and classifying data, and no specific individual patient data was displayed in the results or any other part of this report. The survey instrument did not ask for specific patient information that could be used for identification, such as name, social security number, or home address. Additionally, the survey was completely voluntary and informed the user of the intended purpose of the data collected.

RESULTS

For the first research question regarding the extent and cost of outpatient pharmacy utilization among the three available prescription drug sources at NHCL, the results revealed that 91% of the workload and 71% of the costs were attributed to the MTF pharmacies, 7% of the workload and 19% of the costs were attributed to the MCSC retail network pharmacies, and 2% of the workload and 10% of the costs were attributed to the NMOP.

Pharmacy workload and costs for the three drug sources were further broken down by TRICARE Prime and Non-Prime utilization for formulary and non-formulary drugs and are shown in Table 2.

Table 2

TRICARE Prime and Non-Prime Utilization and Costs for NHCL Formulary and Non-Formulary Drugs for each of the three pharmacy sources (June 1, 2001 – August 31, 2001).

Utilization Type	Pharmacy Source					
	MTF		MCSC		NMOP	
	Prescriptions	Costs	Prescriptions	Costs	Prescriptions	Costs
<u>Prime</u>						
Formulary	121,354	\$1,996,434	3,331	\$129,393	389	\$32,041
Non-Formulary	2,667	\$40,784	2,776	\$302,613	1,019	\$189,833
Total	124,021	\$2,037,218	6,107	\$432,006	1,408	\$221,874
<u>Non-Prime</u>						
Formulary	109,690	\$1,754,864	6,596	\$211,976	909	\$58,844
Non-Formulary	3,548	\$51,613	5,579	\$407,865	1,838	\$268,889
Total	113,328	\$1,806,477	12,175	\$619,841	2,747	\$327,733

Note. Costs were calculated for MTF utilization using NHCL's average cost/prescription of \$16.66.

The average cost per prescription for MCSC and NMOP utilization was calculated using data from this table and are displayed in Figure 2. Although the average cost per prescription for the NMOP was significantly higher than the MCSC retail network pharmacies, it is important to note that NMOP prescriptions are normally filled for a 90-day supply as opposed to a 30-day supply in the MCSC retail pharmacies. Therefore, the cost per prescription for the NMOP would most likely be approximately one third of the value shown.

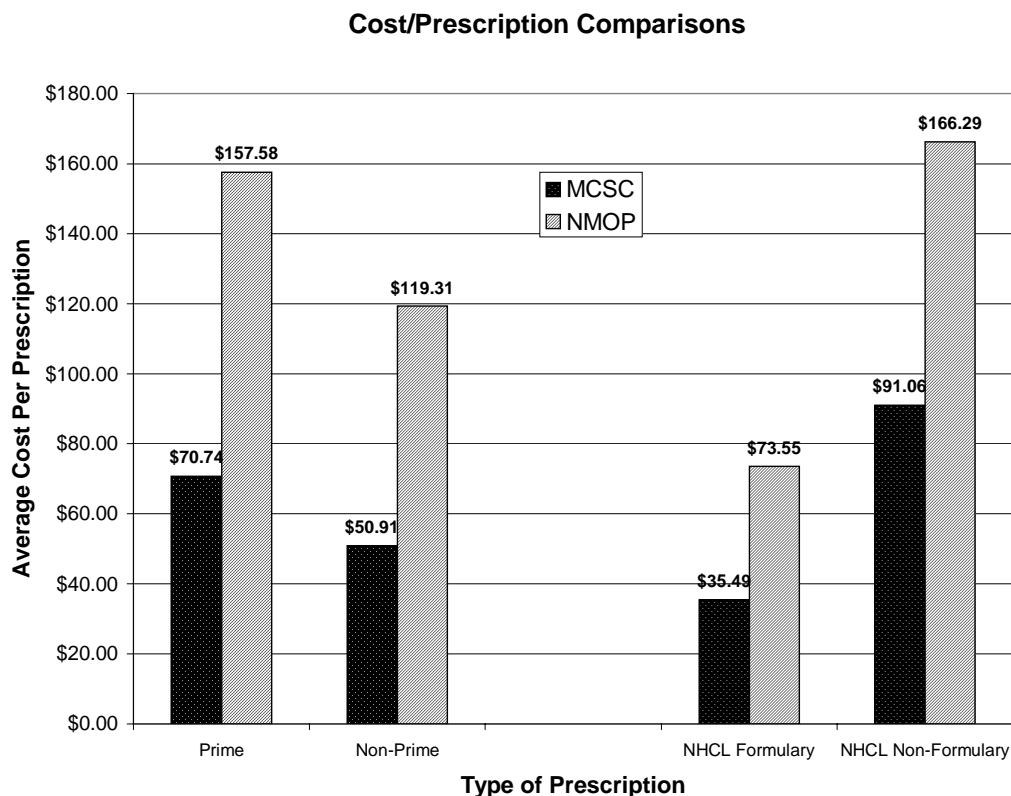


Figure 2. Average cost per prescription comparisons for NHCL formulary and non-formulary drugs by pharmacy source and beneficiary type (June 1, 2001 – August 31, 2001).

Outpatient pharmacy utilization statistics for each of the three pharmacy sources were also calculated by drug name and stratified by patient age. A list of the top 20 utilized drugs by pharmacy source and beneficiary type can be found in Appendix B. Results revealed that Non-Prime beneficiaries over age 65 accounted for nearly 50% of the total pharmacy costs for each of the three sources. Figures 3 and 4 show the cost of pharmacy utilization stratified by age and source for TRICARE Prime and Non-Prime beneficiaries.

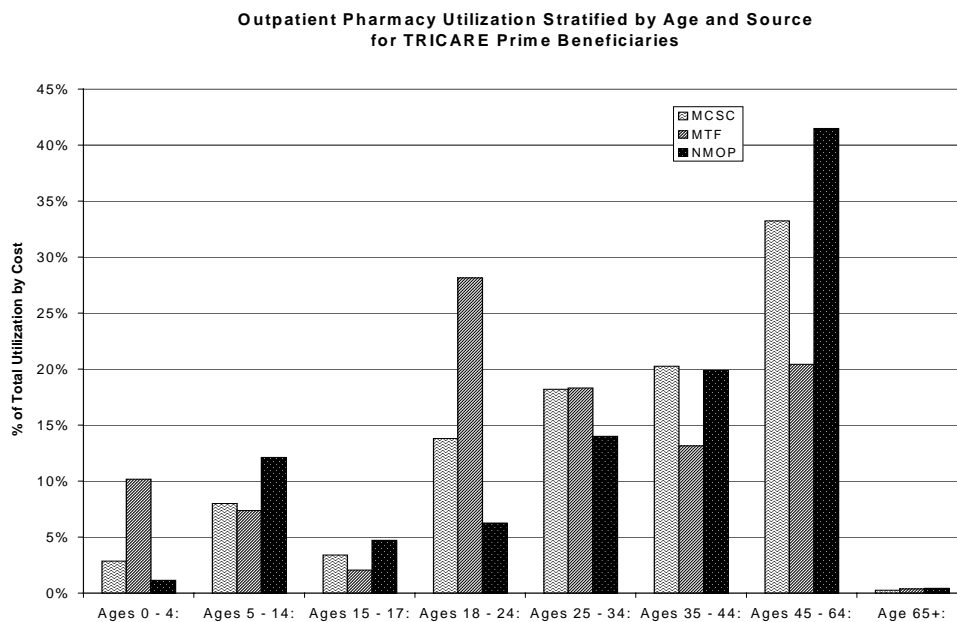


Figure 3. Outpatient pharmacy utilization stratified by Age and Source for TRICARE Prime beneficiaries at NHCL (June 1, 2001 – August 31, 2001).

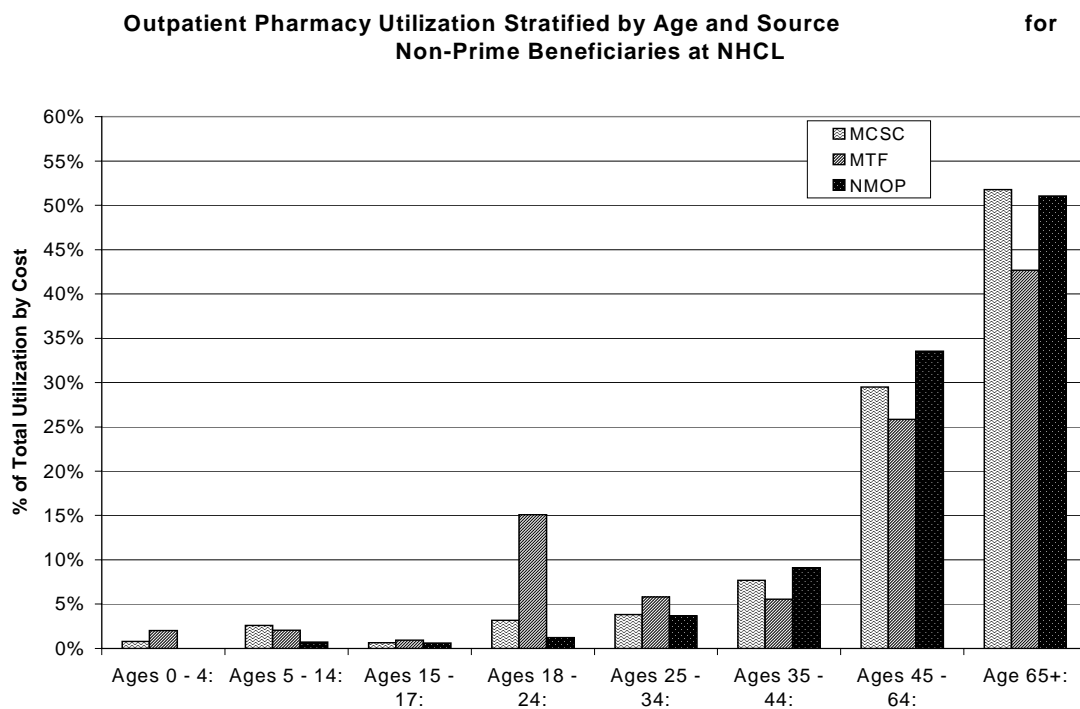


Figure 4. Pharmacy utilization stratified by age and source for Non-Prime beneficiaries at NHCL (June 1, 2001 – August 31, 2001).

For the second research question regarding where and to what extent outpatient pharmacy utilization occurs in the MCSC retail network by TRICARE Prime and Non-Prime beneficiaries, results were only reported for those pharmacies located within the immediate Jacksonville, NC area (approximately 10 miles). Although a substantial amount of MCSC pharmacy utilization occurred outside the Jacksonville area, this more distant utilization was regarded as relatively uncontrollable. Table 3 shows the retail pharmacies in the Jacksonville, NC area that were most frequently utilized by TRICARE Prime beneficiaries during the three-month study period.

Table 3

The most frequently utilized retail pharmacies in the Jacksonville, NC area by TRICARE Prime beneficiaries for formulary and non-formulary drugs (June 1, 2001 – August 31, 2001).

Pharmacy Name	Pharmacy Address	NHCL Formulary		NHCL Non-Formulary	
		Scripts	Costs	Scripts	Costs
Eckerd Drug #8576	377 Western Blvd	687	\$22,179.21	563	\$59,760.24
Wal-Mart Pharmacy #1298	100 Western Blvd	380	\$18,675.72	412	\$49,595.07
Eckerd Drug #8575	622 N. Marine Dr.	208	\$8,450.47	182	\$18,013.01
Johnson Drug Williamsburg	2200 Gum Branch Rd.	178	\$8,251.46	155	\$15,321.14
Target Pharmacy #T-1226	1395 Western Blvd	95	\$3,614.74	76	\$8,202.25
Johnson Drug Company Inc.	714 New Bridge St.	55	\$3,224.71	45	\$7,763.13
Johnson Westpark Drugs	3085 Richlands Hwy.	85	\$3,198.73	66	\$9,981.94
Northwoods Drug Company	344 Henderson Dr.	54	\$1,872.72	42	\$2,861.08
Doctors Park Pharmacy	200 Doctor's Dr.	27	\$985.41	10	\$344.47
Total		1,769	\$70,453.17	1,551	\$171,832.30

This data revealed that 56% of MCSC pharmacy utilization by TRICARE Prime enrolled beneficiaries occurred in the local Jacksonville area, with 29% of that utilization being for drugs

available on the NHCL formulary. In comparison, only 34% of Non-Prime beneficiary utilization occurred in the Jacksonville area, with 32% of that utilization representing NHCL formulary drugs. Table 4 shows the most frequently utilized MCSC pharmacies in the local Jacksonville area by Non-Prime beneficiaries for NHCL formulary and non-formulary drugs.

Table 4

The most frequently utilized retail pharmacies in the Jacksonville, NC area by TRICARE Non-Prime beneficiaries for formulary and non-formulary drugs (June 1, 2001 – August 31, 2001).

Pharmacy Name	Pharmacy Address	NHCL Formulary		NHCL Non-Formulary	
		Scripts	Costs	Scripts	Costs
Eckerd Drug #8576	377 Western Blvd	467	\$15,275.06	402	\$30,481.89
Wal-Mart Pharmacy #1298	100 Western Blvd	264	\$9,836.84	340	\$26,570.79
Johnson Drug Williamsburg	2200 Gum Branch Rd.	279	\$9,424.80	288	\$22,270.45
Johnson Westpark Drugs	3085 Richlands Hwy.	201	\$7,858.93	229	\$17,510.18
Northwoods Drug Company	344 Henderson Dr.	208	\$7,218.92	182	\$14,085.85
Johnson Drug Company Inc.	714 New Bridge St.	162	\$5,292.35	124	\$10,027.24
Eckerd Drug #8575	622 N. Marine Dr.	146	\$4,452.59	130	\$8,005.53
Doctors Park Pharmacy	200 Doctor's Dr.	130	\$4,419.60	109	\$6,730.19
Target Pharmacy #T-1226	1395 Western Blvd	121	\$3,526.19	92	\$6,700.32
Total		1,978	\$67,306.04	1,896	\$142,382.20

In the second study phase, a survey was administered to 344 randomly selected TRICARE Prime beneficiaries in the Hospital Family Practice Clinic and Navy Family Practice Clinic. The survey instrument was divided into two sections. The first section of the survey addressed the third research question of whether certain characteristics, behaviors, and perceptions of the beneficiary predict MCSC retail network pharmacy utilization. The mean and

standard deviation for each of the response variables are shown in Table 5. For the binary response variables coded 1 or 0, the mean actually represents the proportion of the sample population whose answers were coded as 1. For example, the variable "gender" was coded 1 if male and 0 if female, therefore, the mean value of .27 in table 5 for "gender" indicates that 27% of the respondents were male. The variable regarding sponsor's rank was coded on a scale of 1 to 18 with (E-1) being 1 and (O-6) being 18. For the scaled responses, a five point scale was used with 1 for poor, 2 for fair, 3 for good, 4 for very good, and 5 for excellent. For example, the mean response for the perception of waiting times at the NHCL pharmacy was 2.94 in Table 5 indicating a value between fair and good.

Table 5.

Descriptive Statistical Results for each of the response variables in the Pharmacy Survey

Variable	n	Mean	SD
Sponsor's Rank	320	7.26	4.46
Age	288	32.71	11.90
Gender (1=Male, 0=Female)	339	.27	.44
Clinic (1=HFPC, 0=NFPC)	342	.78	.41
Active Duty (1=Yes, 0=No)	342	.17	.38
Active Duty Dependent (1=Yes, 0=No)	342	.60	.49
Retired (1=Yes, 0=No)	342	.08	.27
Retired Dependent (1=Yes, 0=No)	342	.12	.33
# of retail pharmacy visits in the past 12m	342	1.13	2.67
# of visits to a healthcare provider in the past 12m	341	5.78	7.72
# of referrals to the civilian network in the past 12m	342	.73	2.16
Ever used the NMOP (1=Yes, 0=No)	341	.16	.36
Aware that NHCL Pharmacy could fill civilian scripts (1=Yes, 0=No)	340	.69	.46
Perception of waiting times at the NHCL pharmacy (5=Excellent)	335	2.94	1.08
Ability of NHCL to meet their medication needs (5=Excellent)	334	3.37	1.07
Overall perception of pharmacy services at NHCL (5=Excellent)	333	3.32	1.06
Overall perception of care received at NHCL (5=Excellent)	332	3.30	1.06

The frequency distributions for each of these variables can be found in Appendix C. The n-values for the variables in the survey varied due to missing data on some of the respondents' surveys. These missing data resulted in a valid sample size of 255 when missing cases were deleted.

Multivariate linear regression was used to test the hypothesis that independent factors concerning access and convenience were significant in predicting the use of retail pharmacies by TRICARE Prime beneficiaries. All independent variables from the survey instrument were entered into the model and then subsequently removed to determine the amount of shared variance uniquely attributable to each. Table 6 shows the regression results for the full model. Table 6.

Full Model Analysis of Variance (ANOVA) Table for the NHCL Outpatient Pharmacy Survey.

	Sum of Squares	df	Mean Square	F	Sig.
Regression	416.208	16	26.013	6.231	.000
Residual	993.533	238	4.175		
Total	1409.741	254			

Independent predictor variables accounted for nearly 30% of the shared variance in the full model, $r^2 = .295$, $p < .001$. However, when each independent variable was removed and individual F-tests calculated, age, sponsor's rank, and the number of referrals to a civilian provider were the only significant variables in contributing to the variance in retail pharmacy utilization (alpha probability level set at .05.).

The variables for the sponsor's rank and respondent's age correlated positively with the dependent variable and together explained about 5% of the shared variance in the model. As the sponsor's rank and the respondent's age increased, so did pharmacy utilization in the MCSC retail network. This positive correlation was expected due to the usual increase in pharmacy

utilization that is associated with age. However, the reported number of referrals to a civilian provider was the most significant factor in predicting retail pharmacy utilization, and uniquely contributed to nearly 10% of the shared variance in the full model. Table 7 shows the amount of shared variance uniquely attributable to each variable while holding all other variables constant in the equation.

Table 7

Multivariate Regression Results for the NHCL Pharmacy Utilization Survey.

Variable	R ² Full	R ² Reduced	R ² Change	df1	df2	F	Sig.
Sponsor's Rank	.295	.283	-.013	1	240	4.299	.039*
Age	.295	.262	-.034	1	240	11.336	.001*
Gender	.295	.293	-.002	1	240	.626	.429
Clinic	.295	.286	-.009	1	240	2.958	.087
Active Duty	.295	.295	.000	1	240	.011	.918
Active Duty Dependent	.295	.295	.000	1	240	.009	.923
Retired	.295	.293	-.003	1	240	.924	.338
Retired Dependent	.295	.293	-.002	1	240	.683	.409
# of visits to a healthcare provider in the past 12m	.295	.294	-.001	1	240	.402	.527
# of referrals to the civilian network in the past 12m	.295	.197	-.098	1	240	33.224	.000*
Ever used the NMOP	.295	.295	.000	1	240	.036	.849
Aware that NHCL Pharmacy could fill civilian scripts	.295	.295	.000	1	240	.086	.769
Perception of waiting times at the NHCL pharmacy	.295	.292	-.003	1	240	.982	.323
Ability of NHCL to meet their medication needs	.295	.291	-.005	1	240	1.555	.214
Overall perception of pharmacy services at NHCL	.295	.293	-.002	1	240	.778	.379
Overall perception of care received at NHCL	.295	.295	.000	1	240	.056	.813

Note. * Statistically significant factor $p < .05$

Figure 6 provides a graphical representation of the number of retail pharmacy visits as a function of the number of referrals to the civilian network for care during the same time period.

As shown, there is a positive correlation where retail pharmacy utilization increases with the number of civilian network referrals for care.

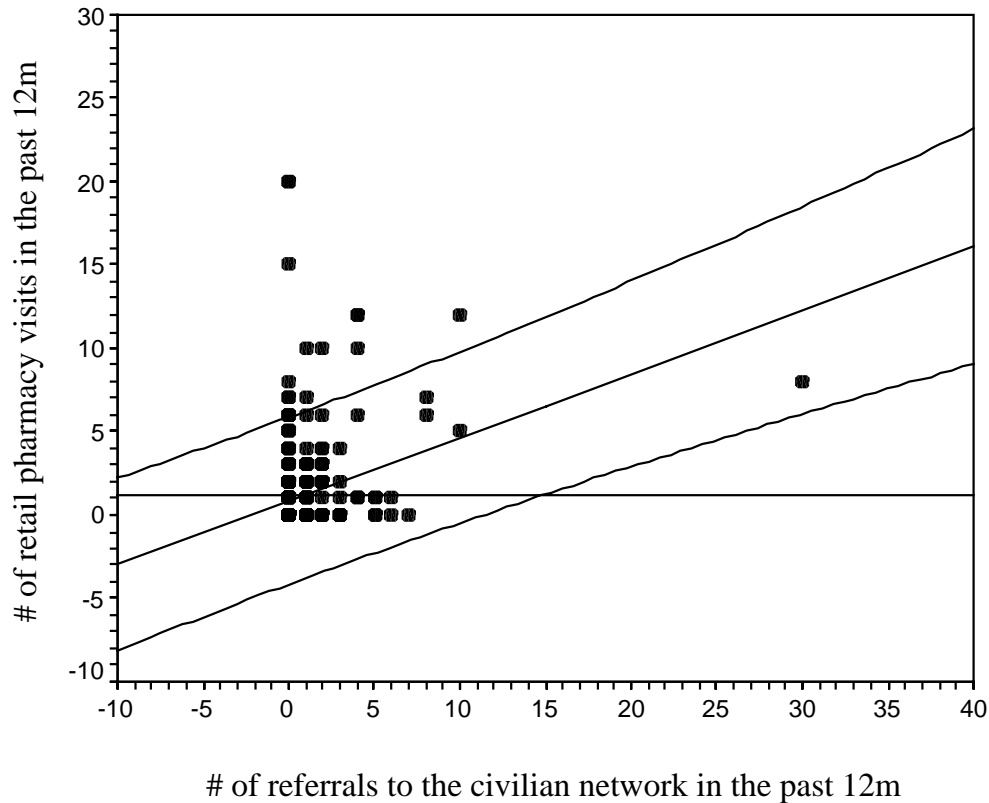


Figure 5. Network pharmacy utilization as a function of referrals to the civilian network for care.

The second section of the survey was used to address research question four regarding to what extent factors of access and convenience determine MCSC retail network pharmacy utilization by TRICARE Prime beneficiaries. Of the 344 respondents to the survey, 98 or approximately 29%, reported that they had utilized a retail network pharmacy in the previous 12 months. These beneficiaries were asked to select contributing reasons to that utilization from a predefined list. The list consisted of factors related to service, quality, access, and convenience when getting prescriptions filled, and allowed for respondents to choose more than one reason. Figure 7 displays the frequencies for each of the self-reported reasons for utilizing the retail pharmacies. As shown, about 73% of respondents indicated that their reason for MCSC

pharmacy utilization was that their medication was not listed on the NHCL formulary and about 43% selected reasons related to convenience. In comparison, only 11% selected reasons related to service, quality, or knowledge of benefits.

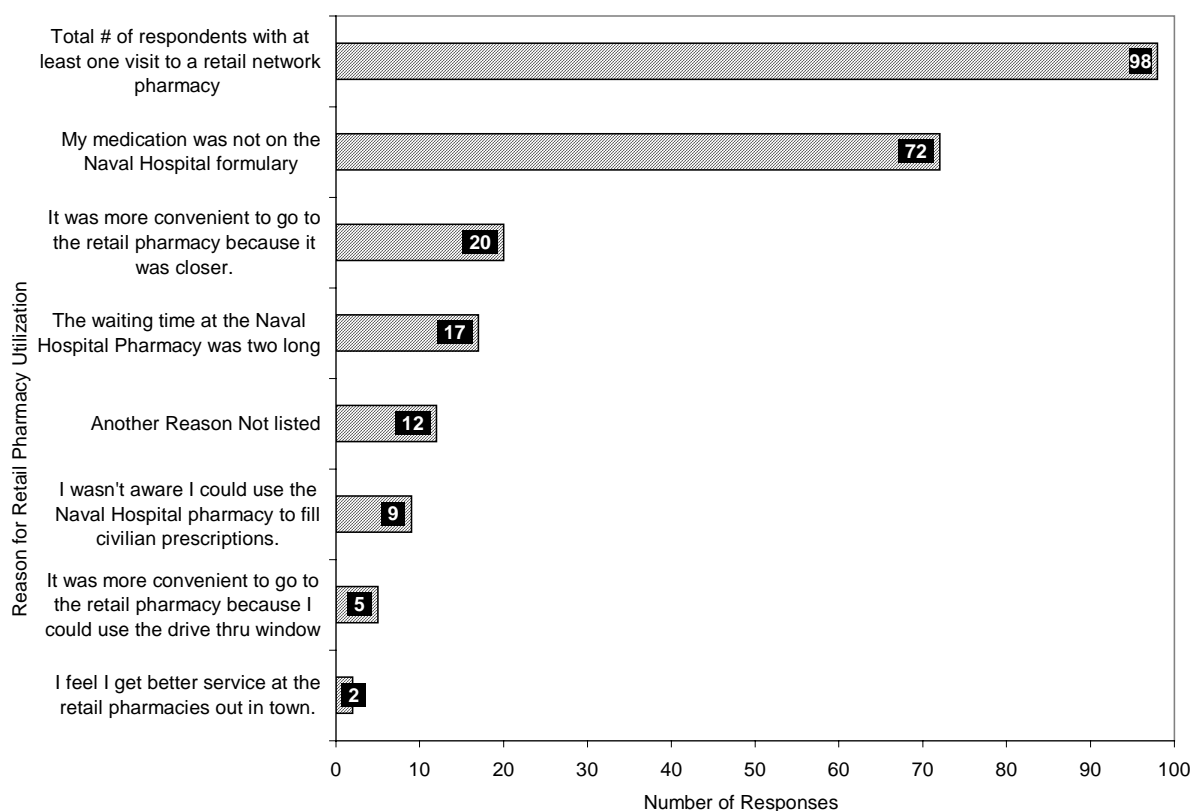


Figure 7. Self-reported reasons for pharmacy utilization in the retail network.

DISCUSSION

Results indicate that during fiscal year 2000, pharmacy utilization across the three available drugs sources was economically more favorable at NHCL than utilization for the same sources in the MHS as a whole. Specifically, NHCL beneficiaries made greater use of the less expensive NMOP and MTF pharmacies than the MHS average, and 10% less use of the more expensive MCSC retail network pharmacies. However, there are no discernable reasons for these findings other than the possible difference in patient acuity and geographical location among the various MTFs in the MHS.

Analysis of the pharmacy utilization data revealed no unexpected results when stratified by patient age. The average cost per prescription was consistent across all age groups for each of the pharmacy sources, and utilization percentages were consistent with the literature regarding increased usage by older patients. However, the analysis did reveal differences in the type of medications sought by TRICARE Prime and Non-Prime beneficiaries. This seemed to be partially attributed to differences in age demographics associated with each group. The extension of pharmacy benefits to Medicare eligible beneficiaries in April of 2001 significantly increased the average age of Non-Prime beneficiaries, with more than 60% over age of 35, whereas 74% of Prime beneficiaries were under that age. Some examples of the differences in medications sought by the two beneficiary types included the non-formulary drugs Raloxifene HCL and Somatropin. Raloxifene HCL is used in the prevention of osteoarthritis in postmenopausal women, and was prescribed 12 times more frequently to Non-Prime beneficiaries in the retail network. Similarly, Somatropin is a drug used to treat pituitary disorders in adolescents, and was prescribed 2.5 times more frequently to Prime beneficiaries in the retail network.

Differences in prescribed medications by beneficiary type may also be attributed to provider prescribing patterns. Providers at NHCL that primarily care for TRICARE Prime beneficiaries are more cognizant of formulary restrictions than providers in the retail network because of the built-in ordering functions in CHCS and mandated adherence to DoD committed use contracts. Although this study did not attempt to profile individual provider prescribing patterns, the survey showed that 73% of Prime beneficiaries indicated the reason for their network utilization was because their prescribed medication was not on the MTF formulary. This information coupled with the finding that those beneficiaries referred to a network provider

were more likely to use a network pharmacy, indicates that network providers may be less likely to adhere to NHCL formulary restrictions.

In the retail network, pharmacy utilization also varied by location with 56% of Prime prescriptions and only 34% of Non-Prime prescriptions filled in the local Jacksonville area. This would seem to indicate that Non-Prime beneficiaries are more geographically dispersed and tend to have prescriptions filled more frequently outside the local Jacksonville area, while Prime beneficiaries generally tend to reside locally and thus have more prescriptions filled locally.

Further evaluation revealed that 67% of Prime prescriptions and 43% of Non-Prime prescriptions were filled by three pharmacies located on Western Boulevard in close proximity to many of the local doctor's offices. This concentration of pharmacy utilization in the retail network strengthens the results of the survey data, which revealed a strong association between referrals to a network provider and network pharmacy utilization, and also the indication that network pharmacy utilization is partially attributed to convenience. Forty-three percent of survey respondents indicated greater convenience as the reason they used retail pharmacies instead of the NMOP or MTF. While cost sharing strategies are designed to influence patients to choose the most economic source of medications, this study has shown that convenience currently outweighs the imposed cost. This should not be surprising, as the literature indicates that the cost sharing currently imposed by the MHS is substantially less than the average co-pay in civilian MCOs.

CONCLUSIONS

With the advent of revised financing as a way to influence MTFs to become more efficient in healthcare delivery, it is imperative that these facilities take full advantage of all utilization data resources available. The implementation of the PDTS has provided a way to capture pharmacy utilization data from all available pharmacy sources, and for all beneficiaries,

regardless of TRICARE enrollment status. This study showed that when combined with TRICARE enrollment data, this gives MTFs the ability to conduct timely retrospective drug utilization review within the MTF and the retail network for all beneficiary types.

By using this data, this study identified distinct differences in the Prime and Non-Prime beneficiary populations and their associated pharmacy needs, which represent an important factor in formulary management. Non-Prime beneficiaries are older as a whole, and therefore tend to have different pharmaceutical needs than the much younger Prime beneficiaries. Formulary management decisions therefore need to be made with these differences in mind. Although the MHS is not directly responsible for the healthcare costs of the Medicare eligible population in the retail network, funds should be allocated that allow the DoD formulary to be expanded to recognize the needs of this population and take advantage of DoD best federal prices for drugs.

This study also revealed that the two primary reasons for network pharmacy utilization are access and convenience. Patients referred to a network provider tended to have their prescriptions filled in nearby retail pharmacies, with 73% indicating formulary restrictions and 43% citing convenience as the reasons for this utilization. Although NHCL could expand services to prevent the referral of patients to the retail network, current capacity issues within the core facility as well as difficulties associated with hiring additional contract providers in a rural setting make this an unrealistic alternative.

Since NHCL has little control over the prescribing patterns of network physicians and current DoD cost sharing rates for beneficiaries, the formulary should be expanded to include drugs that would be expected to recapture Prime utilization. Additionally, NHCL should undertake a cost-benefit study to determine if a satellite MTF pharmacy in the retail network should be established to compete with the convenience of the retail network. Although, a

satellite MTF pharmacy would result in duplicate inventories and additional staffing requirements, these and other related operating expenses would most likely be outweighed by the savings associated with best federal prices for DoD drugs and the increased patient satisfaction due to less out-of-pocket expenses.

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APPENDIX A

Outpatient Pharmacy Utilization Survey

Naval Hospital, Camp Lejeune

Here at Camp Lejeune Naval Hospital it is our goal to provide the highest quality of care to our patients. We value your opinion, and ask that you answer the following questions about your pharmacy benefit to help us continuously improve our services. This survey is completely voluntary and confidential. The results of this survey will be published as part of a graduate management project that will be used to improve pharmacy services for our Military healthcare beneficiaries.

Please answer the following questions to the best of your knowledge and return the completed survey to the clinic receptionist.

Date _____ Sponsor's Rank _____ Gender: M _____ F _____

Age _____ Beneficiary Status: AD _____ AD Dep _____ RET _____ RET Dep _____

	Please Check or Fill in Your Response
1. How many times have you used a retail pharmacy (out in town) in the Jacksonville area to have a prescription filled during the past 12 months?	# of Times <input type="text"/>
2. How many times have you visited a health care provider in the last 12 months?	# of Times <input type="text"/>
3. How many times have you been referred to the civilian network (in town) to receive care during the last 12 months?	# of Times <input type="text"/>
4. Have you ever used the National Mail Order Pharmacy to have your prescriptions filled?	Yes <input type="checkbox"/> No <input type="checkbox"/>
5. Were you aware that civilian prescriptions could be filled at the Naval Hospital Pharmacy?	Yes <input type="checkbox"/> No <input type="checkbox"/>
6. How would you rate the waiting times at the Naval Hospital Pharmacy? <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Poor Fair Good Very Good Excellent
7. How would you rate the ability of the Naval Hospital Pharmacy to meet your medication needs? <input type="checkbox"/>	Poor Fair Good Very Good Excellent
8. Overall, how would you rate the pharmacy services at Naval Hospital, Camp Lejeune? <input type="checkbox"/>	Poor Fair Good Very Good Excellent
9. Overall, how would you rate the care you receive at Naval Hospital, Camp Lejeune? <input type="checkbox"/>	Poor Fair Good Very Good Excellent

Answer the following question only if you have used a retail network pharmacy in the last 12 months.

10. Check all of the following reasons that have influenced you to use a retail pharmacy out in town.

(You may check more than one)

☐ My medication was not on the Naval Hospital formulary

☐ The waiting time at the Naval Hospital Pharmacy was too long

☐ It was more convenient to go to the retail pharmacy because it was closer.

☐ It was more convenient to go to the retail pharmacy because I could use the drive thru window

☐ I feel I get better service at the retail pharmacies out in town.

☐ I wasn't aware I could use the Naval Hospital pharmacy to fill civilian prescriptions.

☐ Another Reason Not listed: Please Specify _____

Please use the back of this form to provide any additional comments regarding your pharmacy benefit.

APPENDIX B

Outpatient Pharmacy Utilization by Drug Description at NHCL

Table 8.

*The Top 20 NHCL Formulary Drugs Utilized by TRICARE Prime Beneficiaries in the MCSC
Retail Network. Pharmacies from June - August 2001.*

Drug Description	Total Utilization	Total Costs
CETIRIZINE HCL	181	\$ 7,410.71
SUMATRIPTAN SUCCINATE	40	\$ 7,264.83
BUPROPION HCL	101	\$ 6,938.04
OMEPRAZOLE	35	\$ 6,057.61
FLUOXETINE HCL	54	\$ 4,704.24
BUTORPHANOL TARTRATE	49	\$ 4,687.18
SERTRALINE HCL	53	\$ 4,190.07
ISOTRETINOIN	13	\$ 4,021.13
INSULIN LISPRO	38	\$ 3,693.13
MESALAMINE	30	\$ 3,639.17
GABAPENTIN	33	\$ 2,950.36
DIVALPROEX SODIUM	33	\$ 2,694.69
PAROXETINE HCL	27	\$ 2,592.19
CIPROFLOXACIN HCL	43	\$ 2,583.28
FENTANYL	11	\$ 2,560.24
BLOOD SUGAR DIAGNOSTIC	28	\$ 2,193.86
OXYCODONE HCL/ACETAMINOPHEN	137	\$ 2,076.71
METHYLPHENIDATE HCL	31	\$ 1,996.63
HYDROCODONE BITARTRATE/APAP	238	\$ 1,836.05
FEXOFENADINE HCL	31	\$ 1,763.65

Table 9.

The Top 20 NHCL Non-Formulary Drugs Utilized by TRICARE Prime Beneficiaries in the MCSC Retail Network. Pharmacies from June - August 2001.

Drug Description	Total Utilization	Total Costs
CELECOXIB	198	\$19,987.42
OLANZAPINE	70	\$16,476.76
ROFECOXIB	144	\$12,906.11
ONDANSETRON HCL	28	\$12,544.56
LORATADINE	150	\$11,556.35
EPOETIN ALFA	4	\$11,151.22
TERBINAFINE HCL	39	\$10,008.96
TOPIRAMATE	69	\$9,707.48
VENLAFAXINE HCL	117	\$9,655.62
INTERFERON BETA-1A	10	\$9,593.61
RIBAVIRIN/INTERFERON A-2B	10	\$9,161.09
SOMATROPIN	5	\$8,033.20
OXYCODONE HCL	60	\$7,449.79
LANSOPRAZOLE	46	\$7,082.91
ETANERCEPT	8	\$6,258.35
LEUPROLIDE ACETATE	13	\$5,841.90
TRAMADOL HCL	119	\$5,468.87
LAMOTRIGINE	19	\$4,907.53
ROSIGLITAZONE MALEATE	43	\$4,849.93
ATORVASTATIN CALCIUM	47	\$4,761.28

Table 10.

The Top 20 NHCL Formulary Drugs Utilized by Non-Prime Beneficiaries in the MCSC Retail Network. Pharmacies from June - August 2001.

Drug Description	Total Utilization	Total Costs
OMEPRAZOLE	105	\$16,177.96
SIMVASTATIN	68	\$8,868.08
BUPROPION HCL	86	\$7,285.45
FLUOXETINE HCL	64	\$6,571.91
CIPROFLOXACIN HCL	100	\$5,544.55
GABAPENTIN	54	\$4,887.87
CETIRIZINE HCL	118	\$4,669.34
SALMET XINAFT/FLUTIC PROPIN	40	\$4,626.44
SERTRALINE HCL	48	\$4,209.37
FEXOFENADINE HCL	86	\$4,190.90
LEVOFLOXACIN	58	\$4,027.35
OXYCODONE HCL/ACETAMINOPHEN	197	\$3,924.23
FENTANYL	22	\$3,664.85
ALENDRONATE SODIUM	55	\$3,600.10
CLOPIDOGREL BISULFATE	43	\$3,437.13
MESALAMINE	29	\$3,416.79
SUMATRIPTAN SUCCINATE	21	\$3,393.61
PAROXETINE HCL	36	\$3,361.52
AMOX TR/POTASSIUM CLAVULANATE	40	\$2,834.54
ISOSORBIDE MONONITRATE	98	\$2,797.64

Table 11.

*The Top 20 NHCL Non-Formulary Drugs Utilized by Non-Prime Beneficiaries in the MCSC**Retail Network. Pharmacies from June - August 2001.*

Drug Description	Total Utilization	Total Costs
CELECOXIB	367	\$35,300.88
ROFECOXIB	320	\$23,833.96
ATORVASTATIN CALCIUM	246	\$19,647.89
OXYCODONE HCL	132	\$17,217.78
LANSOPRAZOLE	118	\$16,499.98
PIOGLITAZONE HCL	83	\$11,250.99
LORATADINE	150	\$10,138.27
TERBINAFINE HCL	52	\$9,643.24
ROSIGLITAZONE MALEATE	74	\$9,427.86
ESOMEPRAZOLE MAG TRIHYDRATE	68	\$8,499.17
ZOLPIDEM TARTRATE	165	\$8,144.94
VENLAFAXINE HCL	94	\$6,932.99
RISPERIDONE	41	\$6,146.83
OLANZAPINE	29	\$5,606.27
CARVEDILOL	68	\$5,372.40
TOLTERODINE TARTRATE	84	\$5,278.84
RALOXIFENE HCL	67	\$4,557.47
RABEPRAZOLE SODIUM	45	\$4,542.72
PRAVASTATIN SODIUM	52	\$4,481.38
TRAMADOL HCL	104	\$4,444.23

Table 12.

The Top 20 Drugs Utilized by NHCL TRICARE Prime Beneficiaries in the NMOP from June - August 2001.

Drug Description	Total Utilization	Total Costs
SOMATROPIN	4	\$23,340.70
CELECOXIB	151	\$23,206.70
LORATADINE	139	\$14,480.45
INTERFERON BETA-1A	9	\$12,244.64
TERBINAFINE HCL	35	\$12,211.46
ROFECOXIB	78	\$9,912.65
SILDENAFIL CITRATE	117	\$9,857.91
EPOETIN ALFA	2	\$7,133.42
CETIRIZINE HCL	80	\$5,784.50
FILGRASTIM	1	\$5,000.26
ONDANSETRON HCL	7	\$4,565.75
ITRACONAZOLE	17	\$4,471.84
ETANERCEPT	4	\$3,474.92
MESALAMINE	16	\$3,183.15
P-EPHED SUL/LORATADINE	26	\$3,080.42
LAMOTRIGINE	7	\$2,837.57
FOLLITROPIN ALPHA,RECOMB	1	\$2,780.64
OMEPRAZOLE	19	\$2,564.48
ATORVASTATIN CALCIUM	17	\$2,276.93
LANSOPRAZOLE	13	\$2,268.28

Table 13.

*The Top 20 Drugs Utilized by NHCL Non-Prime Beneficiaries in the NMOP from
June - August 2001.*

Drug Description	Total Utilization	Total Costs
CELECOXIB	309	\$52,328.33
ROFECOXIB	161	\$20,726.86
ETANERCEPT	18	\$16,331.13
LORATADINE	81	\$8,757.31
GANCICLOVIR	3	\$7,519.06
TERBINAFINE HCL	23	\$7,124.30
SILDENAFIL CITRATE	79	\$7,062.34
ROSIGLITAZONE MALEATE	41	\$6,900.68
PIOGLITAZONE HCL	25	\$5,719.95
INTERFERON BETA-1A	4	\$5,565.62
MYCOPHENOLATE MOFETIL	7	\$5,465.21
ATORVASTATIN CALCIUM	40	\$5,447.58
TOLTERODINE TARTRATE	42	\$5,296.20
TACROLIMUS ANHYDROUS	8	\$5,160.28
SOMATROPIN	2	\$5,035.51
RALOXIFENE HCL	44	\$5,000.11
OMEPRAZOLE	37	\$4,987.96
SIMVASTATIN	69	\$4,926.42
CYCLOSPORINE, MODIFIED	12	\$4,610.27
INTERFERON BETA-1B	3	\$4,446.92

APPENDIX C

Frequency Distributions for the Pharmacy Survey Data

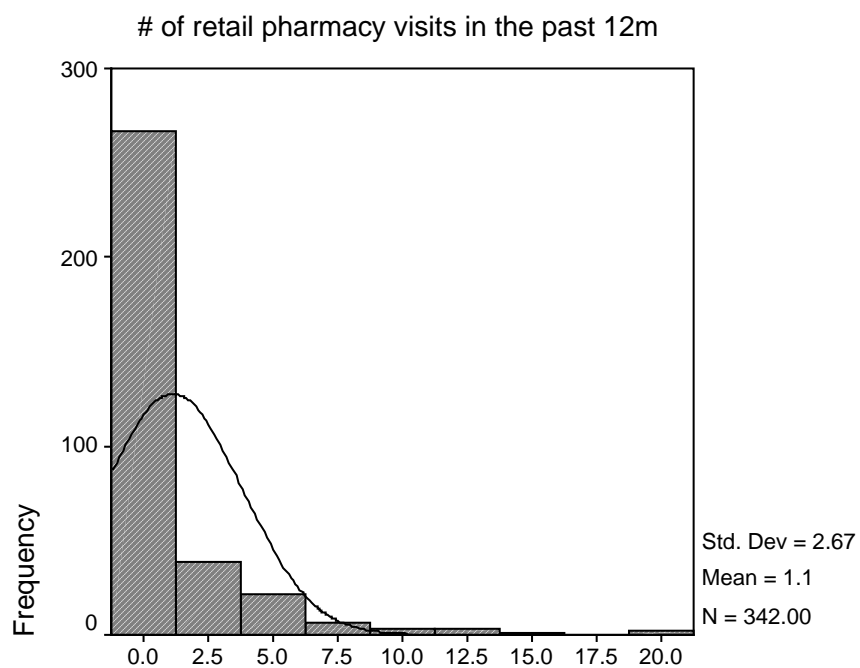


Figure 7. # of retail pharmacy visits in the past 12m

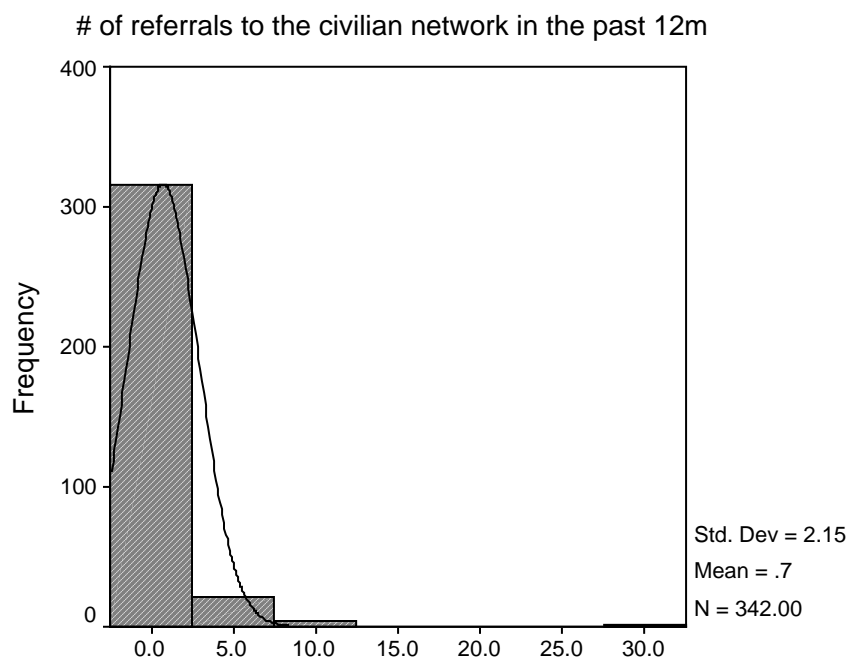


Figure 9. # of referrals to the civilian network in the past 12m

Peception of Waiting times at the NHCL Pharmacy (5=excellent)

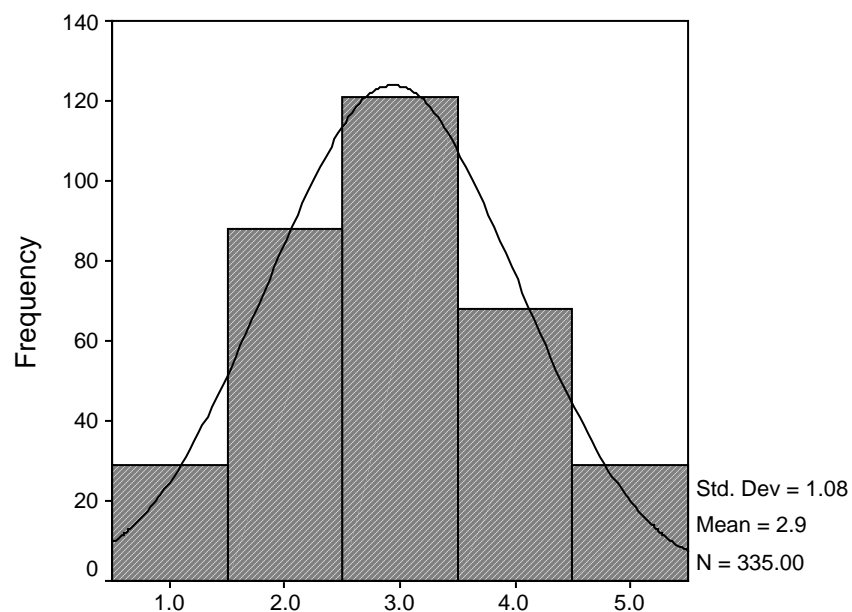


Figure 10. Peception of Waiting times at the NHCL Pharmacy (5=excellent)

Ability of NHCL Pharmacy to meet medication needs (5=excellent)

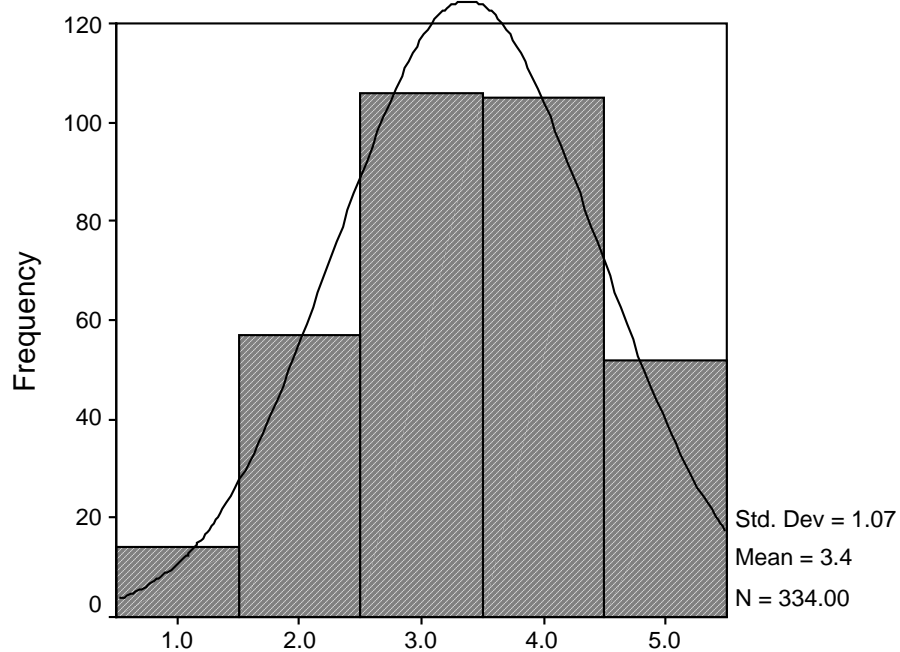


Figure 11. Ability of NHCL Pharmacy to meet medication needs (5=excellent)

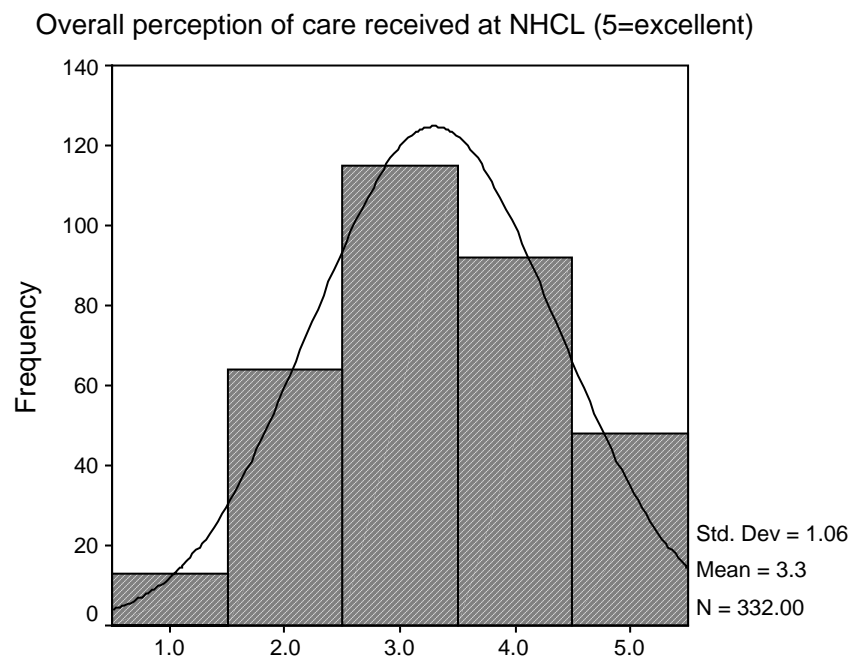


Figure 13. Overall perception of care received at NHCL (5=excellent)

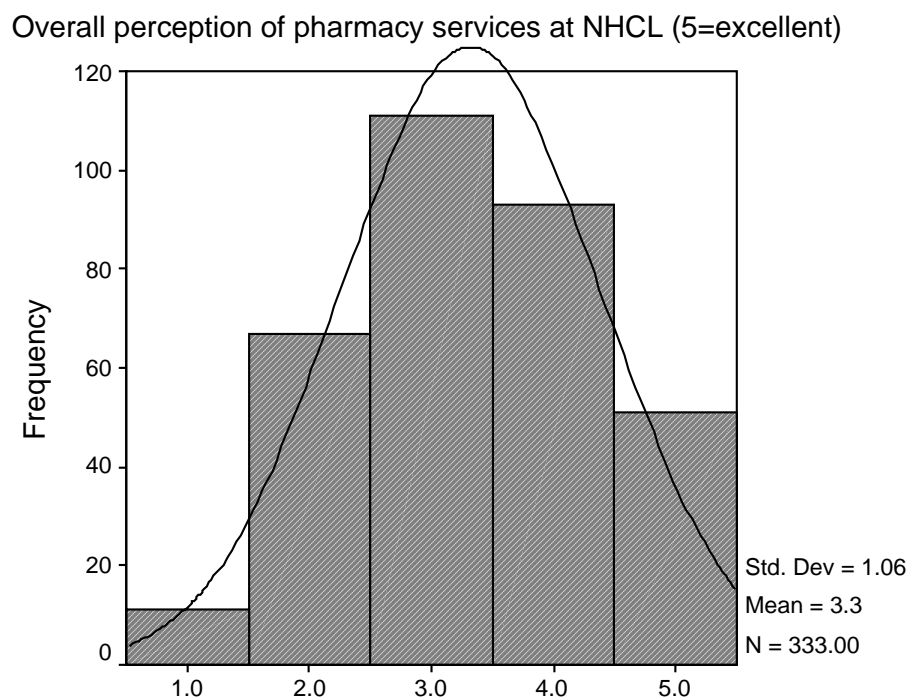


Figure 12. Overall perception of pharmacy services at NHCL (5=excellent)

Sponsor's Rank		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	E1	7	2.0	2.2	2.2
Valid	E1	7	2.0	2.2	2.2
	E2	5	1.5	1.6	3.8
	E2	5	1.5	1.6	3.8
	E3	31	9.0	9.7	13.4
	E3	31	9.0	9.7	13.4
	E4	39	11.3	12.2	25.6
	E4	39	11.3	12.2	25.6
	E5	64	18.6	20.0	45.6
	E5	64	18.6	20.0	45.6
	E6	44	12.8	13.8	59.4
	E6	44	12.8	13.8	59.4
	E7	32	9.3	10.0	69.4
	E7	32	9.3	10.0	69.4
	E8	29	8.4	9.1	78.4
	E8	29	8.4	9.1	78.4
	E9	11	3.2	3.4	81.9
	E9	11	3.2	3.4	81.9
	WO1	1	.3	.3	82.2
	WO1	1	.3	.3	82.2
	WO2	4	1.2	1.3	83.4
	WO2	4	1.2	1.3	83.4
	WO3	3	.9	.9	84.4
	WO3	3	.9	.9	84.4
	O1	1	.3	.3	84.7
	O1	1	.3	.3	84.7
	O2	2	.6	.6	85.3
	O2	2	.6	.6	85.3
	O3	23	6.7	7.2	92.5
	O3	23	6.7	7.2	92.5
	O4	17	4.9	5.3	97.8
	O4	17	4.9	5.3	97.8
	O5	5	1.5	1.6	99.4
	O5	5	1.5	1.6	99.4
	O6	2	.6	.6	100.0
	O6	2	.6	.6	100.0
	Total	320	93.0	100.0	
	Total	320	93.0	100.0	
Missing	System	24	7.0		
Missing	System	24	7.0		
Total		344	100.0		
Total		344	100.0		

Figure 14. Frequency Distributions for the variable of sponsor's rank.

Beneficiary Status		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Active Duty	58	16.9	17.4	17.4
Valid	Active Duty	58	16.9	17.4	17.4

	Active Duty	207	60.2	62.0	79.3
	Dependent				
	Retired	27	7.8	8.1	87.4
	Retired	27	7.8	8.1	87.4
	Retired	42	12.2	12.6	100.0
	Dependent				
	Retired	42	12.2	12.6	100.0
	Dependent				
	Total	334	97.1	100.0	
	Total	334	97.1	100.0	
Missing	System	10	2.9		
Missing	System	10	2.9		
Total		344	100.0		
Total		344	100.0		

Figure 15. Frequency Distributions for the variable of beneficiary status.